



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/761,124

01/20/2004

Olav Finkenwirth

NOS-102

8794

42419 7590 06/27/2008
PAULEY PETERSEN & ERICKSON
2800 WEST HIGGINS ROAD
SUITE 365
HOFFMAN ESTATES, IL 60195

EXAMINER

WANG, EUGENIA

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/27/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/761,124	Applicant(s) FINKENWIRTH ET AL.	
	Examiner EUGENIA WANG	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-23 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the amendment received February 25, 2008:
 - a. Claims 1-35 are pending, with claims 1-23 and 35 withdrawn as being drawn to a non-elected invention.
 - b. The previous 112 rejection has been withdrawn in light of the amendment.
 - c. The previous rejections with respect to US 6440597 (Mizuno et al.) and WO 99/54131 (Thompson et al.) have been withdrawn in light of the amendment. It is noted that US 4937152 (Sato et al.) has been given a different interpretation and has been accordingly applied using this interpretation, as necessitated by the amendment.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 17, 2008 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1795

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24-29 and 31-34 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4937152 (Sato et al.).

As to claim 24, Sato et al. teach a fuel cell with a solid electrolyte [5], in wherein the electrolyte [5] in combination with spacer [10] is interpreted as the sealing structure (col. 4, lines 52-54; fig. 2(c)). The electrolyte [5] is seen as the insulating layer of the sealing structure, wherein the electrolyte [5] layer is applied to both the separator [3] and fuel cell via air electrode [4] (fig. 2(a); fig. 2(c)). As seen in fig. 2c, electrolyte layers lie between adjacent separators. The spacer [10] is interpreted to be the sealing layer, as it has sealing properties (since fuel and air paths are formed in it and delivered to the fuel cell, and thus it must have some sort of sealing property, as it limits the reactant flow to the paths formed within it) (fig. 2(c)). The spacer [10] is indicated to be a different material than that of the electrolyte, as the cross-hatching in fig. 2(c) is different for the spacer [10] and the electrolyte [5]. (It is noted that the structure of fig. 2(c) inherently includes the method of forming it, and thus includes applying the insulating (electrolyte [5]) layer and sealing layer (spacer [10])).

As to claims 25-27, Sato et al. teach that the electrolyte layer [5] (which also serves as the insulating layer) can be formed using plasma thermal spraying (col. 3, lines 61-68).

As to claims 28, 29, 32, and 33, since the electrolyte [5] of Sato et al. serves as the insulating layer, its application is done simultaneously in one process step (as applied to claims 28, 29, and 33). It is noted that since the electrolyte [5] is formed on

an air electrode [4], the air electrode must be formed prior to applying the insulating layer (electrolyte [5]) (as applied to claim 28) (col. 3, lines 61-68). Additionally, the plasma coating nozzle would inherently extend to a certain displacement area in order to apply the electrolyte layer and the insulating area, where the nozzle is extended to a point that it covers all required sealing locations (as applied to claims 32 and 33).

As to claim 31, Sato et al.'s fig. 2c shows the fuel cell member [1] (as seen in fig. 2a) as a stack. The fuel cell is a solid oxide fuel cell, as indicated by the yttria-stabilized zirconia electrolyte (col. 3, lines 61-63).

As to claim 34, it is inherent to Sato et al.'s fuel cell stack that the sealing layer (spacer [10]) is applied after insulating layer (electrolyte [5]).

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that any other method would not yield the structure of Sato et al. The inherency of this method is evidenced by the fact that single fuel cells (which requires the depositing of insulating layer (electrolyte [5]) are made before a stack is made) (col. 1, lines 17-45; fig. 2(a); fig. 2(c)). Accordingly, the stacks are formed after the individual fuel cells are formed, and thus the spacers (sealing layer [10]) must be applied after the application of the electrolyte.

The Examiner requires applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that the arguments with respect to Mizuno and Thompson et al. are moot, as those rejections have been withdrawn in light of the amendment.

With respect to Sato et al., Applicant's arguments are drawn to an interpretation wherein the previous interpretation was drawn to the fact that electrolyte [5] served as both the insulating layer and the sealing layer.

Examiner submits that the argument is moot because this interpretation is no longer relied upon. Instead Sato et al. is interpreted in such a manner that electrolyte [5] serves as the insulating layer and spacer [10] serves as the sealing layer, wherein the insulating layer is formed from the electrolyte material and the sealing layer is formed from a different material. The claim language does not preclude this interpretation, and thus the new rejection (as seen above in the 102 section) is deemed proper.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al., as applied to claim 24, in view of US 5603875 (Giller et al.).

Sato et al. does not teach that one predetermined sealing area of at least one separator plate is roughened prior to being coated with the insulating layer.

Giller et al. teaches the deposition of a zirconia (wherein yttria stabilized zirconia is one embodiment, the same substance as the electrolyte [5] of Sato et al.) substance by plasma deposition (the same method used in Sato et al.), wherein the surface of the substrate that is to receive the plasma deposition is roughened (col. 4, lines 36-46; col. 5, lines 20-43). The motivation for wanting to roughen the surface of the substrate prior to applying plasma stray deposition is to promote adhesion and bounding of the solid zirconia layer (layer that is being deposited) (col. 5, lines 40-43). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to want to roughen at least one predetermined sealing area of at least one separator plate (i.e. the substrate as referred to by Giller et al.) in Sato et al.

Art Unit: 1795

prior to plasma spraying the zirconia in order to promote adhesion and bounding of the zirconia layer. (It is noted that although Giller et al. is not drawn to a solid oxide fuel cell like Sato et al., the process (plasma spraying) and the material (zirconia, especially yttria stabilized zirconia) is the same. Accordingly, Giller et al. teaches of solving a problem that is associated with applying zirconia via plasma spraying. In this manner, Giller et al. can be combined with Sato et al., as it solves the same problem: providing better adhesion and binding via the process.)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./
Examiner, Art Unit 1795

/Gregg Cantelmo/
Primary Examiner, Art Unit 1795
for E. Wang, Examiner of Art Unit 1795